TAXONOMIC REEVALUATIONS IN NORTH AMERICAN *ERIGERON* (ASTERACEAE: ASTEREAE)

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ABSTRACT

Four taxa of *Erigeron* are raised from varietal to specific rank: *E. breweri* var. *klamathensis* to **E. klamathensis** (Nesom) Nesom, comb. et stat. nov., *E. decumbens* var. *robustior* to **E. robustior** (Cronq.) Nesom, comb. et stat. nov., *E. engelmannii* var. *davisii* to **E. davisii** (Cronq.) Nesom, comb. et stat. nov., and *E. utahensis* var. *sparsifolius* is treated as *E. sparsifolius* Eastw. The morphological distinctions of these taxa are equivalent to those of other accepted species of *Erigeron*. **Erigeron poliospermus** var. **disciformis** (Cronq.) Nesom, comb. et stat. nov. is raised in rank from *E. poliospermus* forma *disciformis*. **Erigeron clokeyi** var. **pinzliae** Nesom, var. nov. occupies the major portion of the range of the species; the typical variety is restricted to Clark Co., Nevada. **Erigeron greenei** Nesom, nom. nov., representing a species endemic to California, replaces the later homonym *Erigeron angustatus* Greene. *Erigeron tracyi* Greene is an earlier name for *E. colomexicanus* A. Nels. Taxonomic clarifications are provided for *E. acris*, *E. uncialis* and *E. cavernensis*, and for the interrelated species *E. radicatus*, *E. ochroleucus*, *E. lackschewitzii*, and *E. parryi*. A lectotype is designated for *E. stenophyllus* var. *tetrapleurus*.

RESUMEN

Cuatro taxa de *Erigeron* se elevan del rango varietal al específico: *E. breweri* var. *klamathensis* a **E. klamathensis** (Nesom) Nesom, comb. et stat. nov., *E. decumbens* var. *robustior* a **E. robustior** (Cronq.) Nesom, comb. et stat. nov., *E. engelmannii* var *davisii* a **E. davisii** (Cronq.) Nesom, comb. et stat. nov., y *E. utahensis* var. *sparsifolius* es tratado como *E. sparsifolius* Eastw. Las diferencias morfológicas de estos taxa son equivalentes a las de otras especies aceptadas de *Erigeron*. **Erigeron poliospermus** var. ***disciformis*** (Cronq.) Nesom, comb. et stat. nov., se eleva de rango desde *E. poliospermus* forma *disciformis*. **Erigeron clokeyi** var. ***pinzliae*** Nesom, var. nov. ocupa la mayor parte del área de la especie; la variedad típica está restringida a Clark Co., Nevada. ***Erigeron greenei*** Nesom, nom. nov., que representa una especie endémica de California, reemplaza al homónimo posterior *Erigeron angustatus* Greene. *Erigeron tracyi* Greene es un nombre más antiguo para *E. colomexicanus* A. Nels. Se ofrecen clarificaciones taxonómicas para *E. acris*, *E. uncialis* y *E. cavernensis*, y para las especies interrelacionadas *E. radicatus*, *E. ochroleucus*, *E. lackschewitzii*, y *E. parryi*. Se designa un lectotipo para *E. stenophyllus* var. *tetrapleurus*.

Taxonomic modifications are required for North American *Erigeron* L., preceding a treatment of the genus for the Flora of North America project. A new variety is described, a replacement name is provided for a species currently recognized by a later homonym, one taxon is raised from the rank of forma to variety, and four taxa previously recognized as varieties are treated at specific rank. Morphological distinctions of these former varieties are as significant as those separating many other species of *Erigeron*, and species rank is consistent

with current taxonomy within the genus. Clarifications of the taxonomic status of other taxa also are provided. Fuller morphological descriptions will be provided in the FNA treatment.

***Erigeron breweri* var. *klamathensis* at specific rank**

Erigeron klamathensis (Nesom) Nesom, comb. et stat. nov. BASIONYM: *Erigeron breweri* A. Gray var. *klamathensis* Nesom, Phytologia 72:175. 1992. TYPE: U.S.A. CALIFORNIA. HUMBOLDT CO.: Trinity Summit, 2 mi SE of Devil's Hole, exposed rocky points in woods, westerly exposure, 26 Jul 1935, *J.P. Tracy 15515* (HOLOTYPE: UC!; ISOTYPES: JEPS!, MO!, TEX!).

Flowering Jun–Sep. Outcrops, ridges, crevices, rocky slopes, over shale, granite, serpentine, peridotite, chaparral, oak-pine, fir-oak, mixed evergreen woodlands; (450–)700–2150 m; California, Oregon.

Prior to the recognition of var. *klamathensis*, most previous identifications had referred these plants to the sympatric *Erigeron foliosus* Nutt. var. *confinis* (T.J. Howell) Jeps. I originally treated var. *klamathensis* within *E. breweri* A. Gray (Nesom 1992a) primarily because of similarities in vestiture and habit but here hypothesize that a closer relationship of var. *klamathensis* is more likely with *E. foliosus*. Recognition of *E. klamathensis* at specific rank emphasizes its geographic and morphological distinctions and its ambiguous evolutionary affinity.

Erigeron klamathensis occurs in the Klamath Ranges of Siskyou, Trinity, and Shasta counties, California, and adjacent Oregon (Nesom 1992a, Map 5). It is disjunct from *E. breweri*, which is distributed in the Sierra Nevada, southwestern California, and parts of the Great Basin province (Nesom 1992a, Maps 3 and 4) and is more similar in range and ecology to *E. foliosus*, which is primarily a species of coastal ranges (Nesom 1992a, Maps 6 and 7).

Erigeron klamathensis produces glandular phyllaries similar to those of *E. breweri* var. *breweri* and strongly lignescent bases like *E. breweri* var. *porphyreticus* (as well as *E. foliosus* var. *confinis*). The spreading-deflexed orientation of the stem vestiture in *E. klamathensis* is similar to that commonly found in *E. breweri*, but the sparsely pilose-hirsute vestiture of long, stiff hairs differs from the hirsutulous vestiture of *E. breweri*.

Cauline vestiture in *Erigeron foliosus* is consistently antrorsely strigose to nearly or completely absent, but the habit of *E. foliosus* Nutt. var. *confinis* is nearly identical to that of *E. klamathensis* and the phyllaries are similarly glandular. Their similarity in overall appearance, geography, and ecology has led to mixed collections: e.g., a collection from Josephine Co., Oregon (*Denton 2409*, HSC) has one plant of *E. klamathensis* and several stems of *E. foliosus* var. *confinis*, showing no intermediacy. Intermediates between the two are encountered but they are not common.

The rayless *Erigeron petrophilus* var. *viscidulus* (A. Gray) Nesom also is similar in habit to *E. klamathensis*, has similar involucral vestiture, and is partially

sympatric with it (Nesom 1992a, Map 8). Var. *viscidulus* should considered among possible close relatives of *E. klamathensis*.

The radiate taxa under consideration can be identified by the following contrasts. *Erigeron breweri* is represented in the key by var. *breweri* because it is the only variety of *E. breweri* similar to *E. klamathensis* in its densely glandular phyllaries lacking non-glandular hairs.

1. Stems strigose to glabrate _____ **Erigeron foliosus**
1. Stems hirsute to hispid-hirsute or pilose-hirsute.
   2. Stems arising from slender, woody basal offsets, these from a strongly developed, woody root; hairs of stems 0.5–1 mm long; inner phyllaries with broad, white, thickened margins, lacking distinctly demarcated green apical areas _____ **Erigeron klamathensis**
   2. Stems arising from slender fibrous-rooted rhizome-like bases, without a strongly developed woody root; hairs of stems 0.1–0.4 mm long; inner phyllaries with green apical areas _____ **Erigeron breweri** var. **breweri**

In addition to the difference in vestiture, stems of *E. klamathensis* average considerably shorter than *E. foliosus* var. *confinis* [6–15(–20) cm tall vs. (10–)15–35 (–50) cm] and the root system usually is distinctly thicker and woodier than in var. *confinis*.

***Erigeron decumbens* var. *robustior* at specific rank**

Erigeron robustior (Cronq.) Nesom, comb. et stat. nov. BASIONYM: *Erigeron decumbens* Nutt. subsp. *robustior* Cronq., Brittonia 6:174. 1947. *Erigeron decumbens* Nutt. var. *robustior* (Cronq.) Cronq., Vasc. Pl. Pacific Northwest 5:175. 1955. TYPE: U.S.A. CALIFORNIA. HUMBOLDT CO.: valley of South Yager Creek, 26 Jun 1932, *J.P. Tracy 10252* (HOLOTYPE: UC).

Erigeron robustior is known from Humboldt, Trinity, and Mendocino counties in northwestern California and is disjunct from *E. decumbens*, which is known from six counties of northwestern Oregon. The two taxa also are separated by consistent morphological differences (key below). It is possible that *E. decumbens* and *E. robustior* have an evolutionary sister relationship, but the magnitude of difference between them is consistent with other accepted species of *Erigeron*, particularly within the "*Erigeron eatonii* A. Gray group," of which they are a part.

1. Involucres (4.5–)5–6 mm high, 9–12 mm wide, phyllaries linear-lanceolate, apically linear-acuminate; disc corollas 3–3.5 mm long; cypselae 1.2–1.6 mm long; heavy soils in seasonally wet or dry upland prairie grasslands; 100–300 m elev. _____ **Erigeron decumbens**
1. Involucres 6–8.5 mm high, 12–18 mm wide, phyllaries narrowly oblanceolate to lanceolate, apically acute to acuminate; disc corollas 3.5–4.5 mm long; cypselae (1.8–)2–3.2 mm long; rocky or gravelly slopes, sometimes over serpentine, glades and meadows, sagebrush; 700–1500 m elev. _____ **Erigeron robustior**

Comments regarding the biology of *Erigeron decumbens* sensu stricto on the Center For Plant Conservation website (CPC 2003) note the following: "This

rare species spreads vegetatively via rhizomes over very short distances[of]about 4 inches (<10 cm). Since plants often grow in clumps, it is often difficult to distinguish individuals." In the FNA treatment, these 'rhizomes' are described as 'rhizomiform caudex branches;' plants of *E. robustior* mostly grow singly, without similar vegetative reproduction, but the distinction is not absolute, because *E. robustior* also occasionally produces rhizomiform branches.

Three collections of plants of the *Erigeron eatonii* group from within the geographic range of *E. robustior* are smaller in stature and have smaller heads with elliptic-oblanceolate phyllaries, compared to *E. robustior*. They may represent an undescribed entity. Strother (1987) annotated these collections as "*E. decumbens* var. *robustior* vel aff.," indicating that their identity was uncertain.

Specimens examined: **CALIFORNIA. Humboldt Co.:** near Mad River Buttes, 4739 ft, meadow, 28 Jun 1980, *Baker 2479* (HSC), *Baker 2499* (HSC); Jack Rabbit Valley, along Swayback Ridge 4-wheel drive road 1 mi S of jct with Forest Service road, meadow, 4900 ft, 10 Jun 1980, *Nelson and Nelson 5395* (HSC). *Blankinship s.n.* (UC 87680, fide Strother). 1 Jul 1893, from "Mad River," may be the same entity.

***Erigeron engelmannii* var. *davisii* at specific rank**

Erigeron davisii (Cronq.) Nesom, comb. et stat. nov. BASIONYM: *Erigeron engelmannii* A. Nels. subsp. *davisii* Cronq., Leafl. W. Bot. 3:167. 1942. *Erigeron engelmannii* A. Nels. var. *davisii* (Cronq.) Cronq., Vasc. Pl. Pacific Northwest 5:177. 1955. LECTOTYPE, selected here: U.S.A. IDAHO. IDAHO CO.: Whitebird summit, moist woods, range 2 east, township 29 north, 14 Jun 1941, *R.J. Davis 3254* (MIN; ISOLECTOTYPE: UC). Cronquist (1947) cited the two collections as type material, but he did not specify a holotype. The MIN sheet is annotated by Cronquist as 'type sheet' (fide A.C. Cholewa).

Flowering (Apr–)May–Jul. Bare, rocky ridges and slopes, basalt outcrops, sparsely vegetated woodland openings or edges, commonly with grasses; 1200–1800 m; Idaho, Oregon.

Erigeron davisii occurs in Idaho and eastern Oregon and is geographically disjunct from the range of *E. engelmannii*, which occurs over a wider area to the south and east (Fig. 1). The two are morphologically distinct (key below), and features of *E. davisii* indicate that it probably is equally or more closely related to *E. poliospermus* A. Gray, *E. disparipilus* Cronq., *E. nanus* Nutt., and others. These species are characterized by non-glandular stem hairs of markedly unequal lengths, petiole margins coarsely spreading-ciliate with thick-based hairs, coiling ray corollas, and a tendency for strigose-sericeous achenes. *Erigeron davisii* is distinct among these species primarily in its antrorsely appressed stem hairs; the orientation of the stem vestiture also probably is the reason that it has been hypothesized to be closely related to *E. engelmannii*.

Erigeron engelmannii is similar to *E. davisii* in habit, leaf morphology, coarsely ciliate petiole margins, and has cauline vestiture of nonglandular hairs of disparate length, but it is hypothesized here to be most closely related to *E. pumilus* Nutt. and *E. concinnus* (Hook. & Arn.) Torr. & A. Gray, in agreement

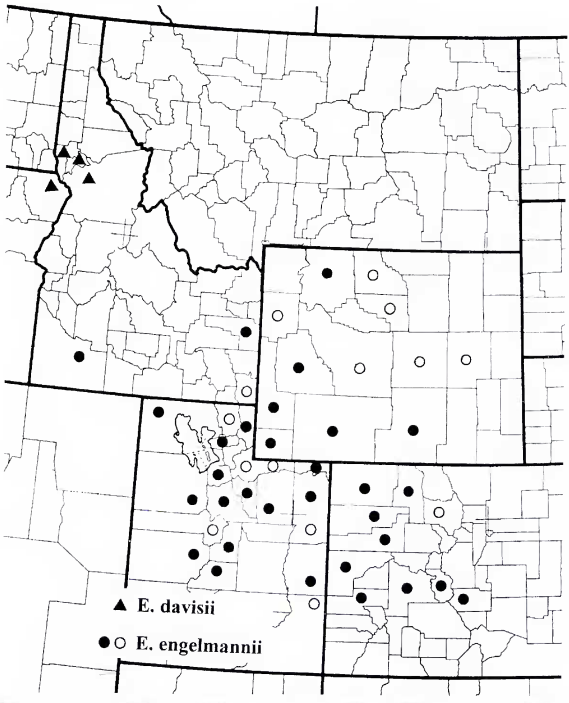

Fig. 1. Distribution of *Erigeron davisii* and *E. engelmannii*. Solid symbols are from collections at NY and BRIT. Open circles are from internet-posted maps (Rocky Mountain Herbarium 1998; Albee et al. 1988) and from Cronquist (1947).

with observations of Cronquist (1947), who noted close similarities among these taxa. All three have ray corollas very narrow (0.8–1.1 mm wide vs. 1.2–1.8 mm wide) and reflexing at the tube-lamina junction (vs. broader and coiling at the tips), disc corollas distinctly inflated and indurate above the tube (vs. not inflated or indurate), and achenes oblong (vs. narrowly obovate). *Erigeron*

engelmannii shares with *E. concinnus* the unusual combination of densely short-hairy disc corollas and an outer pappus of narrow to broad scales.

In contrast to *E. pumilus* and *E. concinnus* and their other close relatives, the stems and leaves of *E. engelmannii* do not have dense, minute glandularity and ray corollas appear not only to reflex (as in the *E. pumilus* group) but also to coil at the tips (as in the *E. poliospermus* group). This apparent combination of ray behaviors in a single species is rare in *Erigeron*. In sum, *E. engelmannii* has features of both the *E. pumilus* group and the *E. poliospermus* group.

1. Involucres 3.5–5(–6) mm high; ray corollas 5–10 mm long, laminae 0.8–1.1 mm wide, apparently both coiling at the tips and reflexing at the tube-lamina junction; disc corollas inflated and indurate above the tube, puberulent; cypselae 1.4–1.8 mm long, oblong; outer pappus of narrow scales or setae ____ **Erigeron engelmannii**
1. Involucres 5–8 mm high; ray corollas 8–14 mm long, laminae 1.2–1.8 mm wide, coiling at the tips, not reflexing; disc corollas not inflated or indurate, glabrate; cypselae 2.1–2.5 mm long, obovate; outer pappus of setae ____ **Erigeron davisii**

Stems and involucres of *E. davisii* are more densely hairy than in *E. engelmannii*, easily seen with a collection of specimens of both; the difference is difficult to characterize in a key.

Erigeron poliospermus forma *disciformis* at varietal rank

Populations of discoid plants of *Erigeron poliospermus* from localities in central Oregon were originally treated by Cronquist at rank of forma. Geographically discrete discoid population systems, without other morphological differentiation, are generally recognized at varietal rank in other species of *Erigeron*.

Erigeron poliospermus A. Gray var. **disciformis** (Cronq.) Nesom, comb. et stat. nov. *Erigeron poliospermus* A. Gray forma *disciformis* Cronq., Brittonia 6:194. 1947. TYPE: U.S.A. OREGON. CROOK CO.: near camp on Hay Creek, rocky hillsides, 840 m, 12 Jun 1894, *J.B. Leiberg 212* (HOLOTYPE: NY; ISOTYPE: GH).

1. Stems branched at or below midstem, basal leaves and branches originating on elongate internodes from proximal 1–6 cm of primary stem; stems and involucres densely minutely glandular, without non-glandular hairs or sparsely hirsute ____ **Erigeron poliospermus** var. **cereus**
1. Stems unbranched, basal leaves and stems originating from compressed nodes at the caudex apex; stems and involucres sparsely minutely glandular and densely hirsute.
   2. Heads discoid, ray florets absent ____ **Erigeron poliospermus** var. **disciformis**
   2. Heads radiate, ray florets present and conspicuous ____ **Erigeron poliospermus** var. **poliospermus**

Erigeron utahensis var. *sparsifolius* at specific rank

Cronquist (1947, p. 273) observed that *Erigeron utahensis* A. Gray and *E. sparsifolius* Eastw. "intergrade so completely that specific recognition is scarcely possible" and treated them within a single species. He later noted (Cronquist 1994, p. 342) that "the species consists of two wholly intergradient varieties of

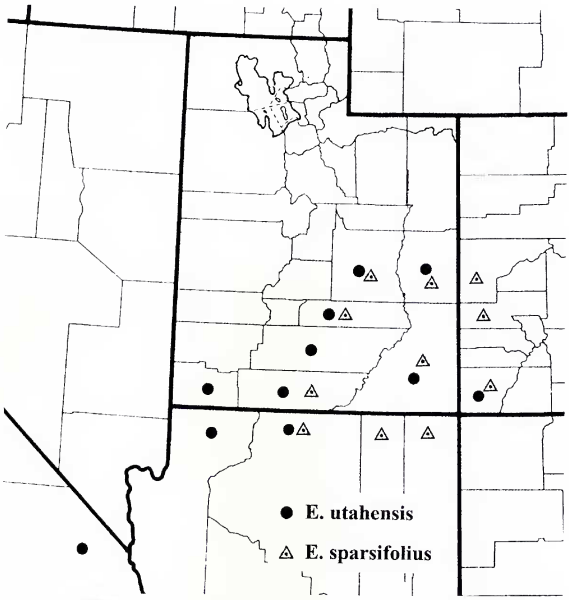

FIG. 2. Distribution of *Erigeron utahensis* and *E. sparsifolius*. Records are from collections at NY and BRIT, as well as several citations from Cronquist (1947).

strikingly different aspect." A large set of collections (NY) confirms the "strikingly different aspect" of these taxa and, in contrast to Cronquist's view, indicates that they are distinct in morphology as well as phenology. The two are sympatric over a significant area (Fig. 2) and are ecologically similar, but in Washington, Garfield, and western Kane counties, Utah, where *E. utahensis* is abundant, *E. sparsifolius* apparently does not occur. In San Juan Co., Utah, where both are common, apparent intermediacy in some collections may be evidence of hybridization, but more generally, *E. sparsifolius* has been identified consistently and it appears to be reproductively isolated from *E. utahensis*. The view that they are "wholly intergradient" is not corroborated by herbarium mate-

rial. And apparently from field observations, A.H. Holmgren noted (label of *Holmgren 16229*, NY, San Juan Co.) that *E. sparsifolius* is "specifically distinct from *E. utahensis*." The two species can be identified by the following contrasts.

1. Cauline leaves linear, bracteate, relatively even-sized above midstem and continuing to immediately proximal to heads; heads (1–)3–10 from branches well above midstem; involucres 3–5 mm high, 5–8 mm wide; ray florets 10–14(–20), corollas 4–8 mm long; disc corollas viscid-puberulent with blunt-tipped hairs; flowering Jun–Sep _____ **Erigeron sparsifolius**
1. Cauline leaves gradually smaller distally, absent proximal to heads; heads 1–3(–5) from branches from midstem or above; involucres 5–7 mm high, (7–)12–15 mm wide; ray florets 28–40, corollas 10–18(–20) mm long; disc corollas sparsely strigose-villous with needle-like hairs; flowering mid Apr–Jun(–Jul) _____ **Erigeron utahensis**

Erigeron sparsifolius Eastw., Proc. Calif. Acad. Sci. 2, 6:297. 1896. *Erigeron utahensis* A. Gray var. *sparsifolius* (Eastw.) Cronq., Brittonia 6:273. 1947. TYPE: U.S.A. UTAH. SAN JUAN CO.: Willow Creek, 14 Jul 1895, *A. Eastwood 48* (HOLOTYPE: CAS; ISOTYPES: GH!, US!).

Wyomingia vivax A. Nels., Bot. Gaz. 56:70. 1913. TYPE: U.S.A. San Juan Co.: Geyser Canyon, [east slope of La Sal Mountains,] dry rocky hills, 9000 ft, 30 Jul 1912, *E.P. Walker 355* (HOLOTYPE: RM; ISOTYPE: GH!, US!).

Flowering Jun–Sep. Rocky or sandy soil, soil pockets and crevices in sandstone, canyon bottoms, stream terraces; 1100–1700 m; Arizona, Colorado, Utah.

Erigeron utahensis A. Gray, Proc. Amer. Acad. Arts 16:89. 1881. TYPE: U.S.A. UTAH. [KANE CO.:] Kanab, *Mrs. A.P. Thompson s.n.* (HOLOTYPE: GH!; internet image!).

Erigeron stenophyllus var. *tetrapleurus* A. Gray, Proc. Amer. Acad. Arts 8:650. 1873. *Erigeron tetrapleurus* (A. Gray) Heller, Bull. Torrey Bot. Club 25:628. 1898. *Erigeron utahensis* A. Gray var. *tetrapleurus* (A. Gray) Cronq., Brittonia 6:272. 1947. LECTOTYPE, designated here: U.S.A. Kane Co.: Kanab, *Mrs. A.P. Thompson s.n.* (GH!, internet image!). Gray also cited another Utah collection (*F.M. Bishop s.n.*, 1873)—this is mounted on the same sheet as the lectotype.

Flowering mid Apr–Jun(–Jul). Rocky slopes, cliff bases, ledges, and crevices, sandstone outcrops and terraces, sandy soil, gravelly limestone, shale, cottonwood floodplains, creosote bush, blackbrush, blackbrush-Joshua tree, warm desert shrub, salt desert shrub, mountain brush, pinyon-juniper, oak-maple-aspen; 800–2100(–2450) m; Arizona, California, Colorado, New Mexico, Utah. It seems likely that *E. utahensis* eventually will be discovered in southern Nevada.

A new variety within *Erigeron clokeyi*

Erigeron clokeyi is distinct in a number of features: a low, relatively caespitose habit; stems erect to basally decumbent-ascending and mostly monocephalous; minutely glandular stems, leaves, and phyllaries; nonglandular cauline hairs spreading-deflexed; leaves narrowly oblanceolate; and ray corollas reflexing at the tube/lamina junction. The species has been treated as a single unit (Cronquist 1947, 1994; Nesom 1992b), but two expressions of leaf vestiture exist within the species. Plants from the Charleston Mountains in Clark Co., Ne-

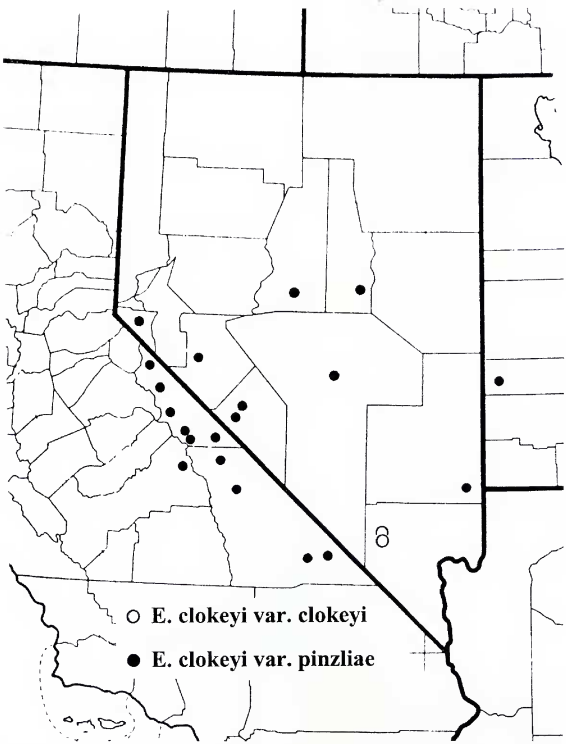

FIG. 3. Distribution of *Erigeron clokeyi*. Records are from collections at NY and BRIT, with additions from CalFlora (2004).

vada (the type locality), have hirsute-strigose leaves; those from other areas of the range (California, Nevada, west-central Utah), including most of the closest populations in southeastern Inyo Co., California, have hispidulous to hirsutulous leaves (Fig. 3). Some plants from Inyo Co. show a tendency toward strigose

foliar vestiture. Cypsela size is slightly but consistently different, and the Clark Co. plants appear to have narrower leaves and a greater tendency for the stems to be decumbent-ascending. The two varieties are ecologically similar.

Erigeron clokeyi Cronq., Brittonia 6:214. 1947. TYPE: U.S.A. NEVADA. CLARK CO.: Charleston Mountains, Lee Canyon, brushy meadow, yellow pine belt, 2700 m, 12 Jul 1937, *I.W. Clokey 7742* (HOLOTYPE: NY!; ISOTYPES: LL!, MINN, MO!, NY!, PH, POM, RY, SMU! TEX!, UC, US!, VDB!, WS, WTU).

Erigeron clokeyi Cronq. var. **pinzliae** Nesom, var. nov. TYPE: U.S.A. NEVADA. MINERAL CO: Wassuk Range, road to Mt. Grant summit, 0.7 road mi below spring, T8N, R28E, NE 1/4 sect. 13, ca. 10,000 ft, 7 Sep 1995, *A. Pinzl 11733* (HOLOTYPE: BRIT; ISOTYPE: NSMC).

Differt a *E. clokeyi* sensu stricto vestimento foliorum hispidulo vel hirsutulo et cypselis minoribus.

Flowering Jun–Sep. Dry, rocky habitats, dry meadows, sometimes with sagebrush or mountain mahogany, treeless areas and often with yellow, bristlecone, or limber pines; 2200–3450 m; California, Nevada, Utah.

Differences between the two varieties are summarized here.

1. Leaves hirsute-strigose, hairs basally ascending, otherwise straight and distinctly antrorsely appressed; cypselae 2.2–2.5 mm; Charleston Mountains, Clark Co., Nevada _____ **Erigeron clokeyi** var. **clokeyi**
1. Leaves uniformly hispidulous to hirsutulous, hairs stiffly spreading to spreading-arching; cypselae 1.8–2 mm; east-central California, southern Nevada, west-central Utah _____ **Erigeron clokeyi** var. **pinzliae**

New name for a California species

Erigeron greenei Nesom, nom. nov. REPLACED SYNONYM: *Erigeron angustatus* Greene, Bull. Calif. Acad. Sci. 1(3):88. 1885 (non *Erigeron angustatus* Fries ex Nym., Consp. Fl. Europ. 2:389. 1879). TYPE: U.S.A. CALIFORNIA. NAPA CO.: dry hills on either side of Napa Valley, Jun–Oct, [Napa, 13 Aug 1874], *E.L. Greene 339* (not located with certainty, see comments in Nesom 1992; probable type material GH!).

The name *Erigeron angustatus* Greene has been used (Nesom 1992) for a discoid species now known to occur in Lake, Napa, Sonoma, Tehama, Trinity, Shasta, and Siskyou counties, California. Because *E. angustatus* Greene is a later homonym, it is replaced here. The new epithet commemorates Edward Lee Greene (1843–1915), whose perception of supraspecific natural groups and generic boundaries, in many instances, has proved to be remarkably close to modern concepts.

Status of *Erigeron cavernensis*

Erigeron cavernensis has been treated as a synonym of *E. uncialis* (Cronquist 1994, Nesom 1992b) but *E. uncialis* var. *conjugans*, which closely approaches *E. cavernensis* in its geographical range (Fig. 4), is markedly different from the latter and perhaps more similar to *E. cronquistii*. *Erigeron uncialis* var. *uncialis* and *E. uncialis* var. *conjugans* have features in common between themselves and contrast as a unit with *E. cavernensis*.

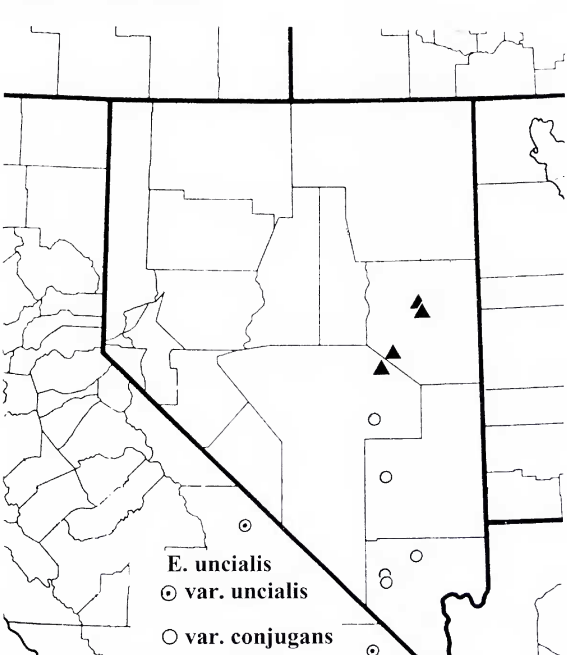

FIG. 4. Distribution of *Erigeron uncialis* and *E. cavernensis*. Records are from collections at NY, NSMC, and BRIT.

1. Phyllaries eglandular or sparsely glandular near the apices and along midregion; stems and leaves eglandular; leaves strigose to hirsute-villous, vestiture less dense on abaxial surfaces; cypselae 1.3–1.8 mm long _____ **Erigeron uncialis**

1. Phyllaries evenly densely glandular; stems and leaves glandular; leaves hirsute-canescent, equally hairy on both surfaces; cypselae 1–1.2 mm long _____ **Erigeron cavernensis**

Erigeron uncialis S.F. Blake, Proc. Biol. Soc. Wash. 47:173. 1934. TYPE: U.S.A. CALIFORNIA. SAN BERNADINO CO.: Clark Mountain, 7000 ft, Jun 1933, *E.C. Jaeger s.n.* (HOLOTYPE: POM; ISOTYPE: US!).

1. Stems 0.8–2.5 cm high, hirsute-villous; leaves 1–2 cm long, hirsute-villous to loosely strigose _____ **Erigeron uncialis** var. **uncialis**
1. Stems 3–7 cm high, loosely villous-strigose; leaves 2–4 cm long, sparsely and closely strigose _____ **Erigeron uncialis** var. **conjugans**

a. Erigeron uncialis S.F. Blake var. **uncialis.** Flowering May–Jul. Crevices, cliff bases, usually in limestone, pinyon-juniper, pine-fir; 1900–2600 m; California.

b. Erigeron uncialis S.F. Blake var. **conjugans** S.F. Blake, Proc. Biol. Soc. Wash. 47:174. 1934. *Erigeron uncialis* S.F. Blake subsp. *conjugans* (S.F. Blake) Cronq., Brittonia 6:211. 1947. TYPE: U.S.A. NEVADA. CLARK CO.: Charleston Mts., Kyle Canyon, Big Falls, crevices of vertical rock faces, 9000 ft, 3 Sep 1927, *C.L. Hitchcock s.n.* (HOLOTYPE: POM; ISOTYPE: US!).

Flowering May–Aug. Crevices in limestone cliffs and boulders, yellow pine or limber pine; 2200–2800 m; Nevada.

Erigeron cavernensis Welsh & Atwood, Great Basin Naturalist 48:495. 1988. TYPE: U.S.A. NEVADA. WHITE PINE CO.: Schell Creek Range, 25 air mi SE of Ely, ca. 2 km NE of summit of Cave Mountain, 3172–3233 m, limestone cliffs and rubble, *Pinus flexilis-P. longaeva* community, 18 Jul 1981, *B. Welsh, S. Goodrich, and E. Neese 910* (HOLOTYPE: BRY; ISOTYPES: NY!, POM, RM, UNLV, US!, UT).

Flowering Jun–Jul. Limestone ridges, outcrops, and cliffs, often with bristlecone pine, limber pine, spruce; 2100–3400 m; Nevada, known only from the White Pine Range of White Pine County and adjacent Nye County.

Status of *Erigeron radicatus* and *E. ochroleucus* var. *scribneri*

Confusion has existed in the distinction between *Erigeron radicatus* and *E. ochroleucus*, but the hypothesis is advanced here that they are distinct species sympatric over a significant area. In this view, *E. radicatus* has a wider geographic distribution (Fig. 5) than previously recognized and *E. ochroleucus* is more restricted in range (Fig. 6).

Small plants of *Erigeron ochroleucus*, often identified as *E. ochroleucus* var. *scribneri*, approach *E. radicatus* in aspect and many plants of *E. radicatus* have been identified as *E. ochroleucus* var. *scribneri*. *Erigeron radicatus* is distinctive in its branched caudex, short-villous cauline vestiture, smaller leaves with more reduced vestiture, smaller heads, involucral hairs usually with colored crosswalls, and fewer pappus bristles (see key couplet below). A thick taproot and unbranched caudex usually are contrasting features of *E. ochroleucus* and the phyllaries of *E. ochroleucus* often are apically linear-acuminate and loose, a feature not found in *E. radicatus*.

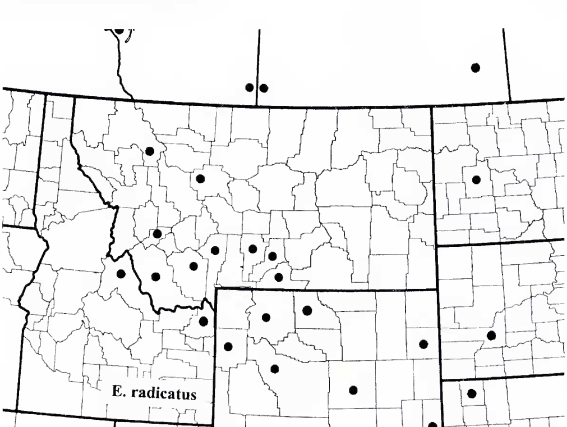

FIG. 5. Distribution of *Erigeron radicatus*. Records are from collections at NY and RM; Nebraska and South Dakota records are from KANU collections, fide Caleb Morse, using the present manuscript as basis for identification.

For the most part, *Erigeron radicatus* seems consistently distinct from *E. ochroleucus*, but I have identified as *E. radicatus* a few plants with involucral vestiture lacking colored crosswalls (eg., Carbon Co., Wyo.: *Dorn 3687*, RM; Fremont Co., Id.: *Moseley 835*, RM) and some plants as *E. ochroleucus* with involucral vestiture with colored crosswalls (e.g., Big Horn Co., Wyo.: *Hurd 208*, RM; Sheridan Co., Wyo.: *Nelson 6149*, RM; Johnson Co., Wyo.: *Nelson 5984*, RM). A few plants with an unbranched caudex are identified here as *E. radicatus* (e.g., Big Horn Co., Wyo.: *Williams 3221*, RM; Gallatin Co., Mont.: *Dorn 914*, RM). Some of these plants of apparently intermediate morphology may represent hybrids or introgressants. The chromosome number is reported as $2n = 36$ from Cheviot Mt., Alberta (Packer & Witkus 1982). A count of $2n = 18$ from Albany Co., Wyoming (Semple & Chmielewski 1987) was from *Erigeron simplex* Greene, the voucher misidentified by Nesom as *E. radicatus*.

Erigeron radicatus often is scapiform at relatively high elevations (2750–3350 m); more eastern populations in the Great Plains at lower elevations (1450–

2550 m) tend to have leafier stems. Plants of the collection from Weld Co. Colorado (rocky ridge ca. 3.4 mi N of Rockport, 6000 ft, *Dorn 8222*, RM), have slightly narrower phyllaries and involucral trichomes essentially without colored crosswalls, but in other respects they are similar to typical (but smallest) *E. radicatus*. Some of the low-elevation populations in Albany and Carbon cos., Wyoming, produce atypically short rays, and I initially regarded the eastern, low-elevation plants as taxonomically distinct. Finally, however, I was unable to find significant difference in other features. Even so, a species over such a wide range of elevation is unusual, both in the U.S.A. and in Canada, where *E. radicatus* occurs from montane sites in Alberta to localities at lower elevation in Saskatchewan. On the other hand, *E. ochroleucus*, one of its closest relatives, occurs over an equally wide elevational range.

Erigeron radicatus Hook., Fl. Bor.-Amer. 2:17, t. 123. 1834. TYPE: CANADA. ALBERTA. Mountains near Jasper's Lake, Rocky Mountains, *Drummond s.n.* (ISOTYPE, fide annotation in 1945 by Cronquist: NY!). The NY sheet does not have collection information other than a label noting "Erigeron divaricatum Hook., very rare, Hook., Am."

Erigeron macounii Greene, Pittonia 3:162. 1897. TYPE: CANADA. ALBERTA: Sheep Mountain, Waterton Lake, 28–31 Jul 1895, *J. Macoun 10858* (type material: NY!). Cited by Cronquist (1947) as a synonym of *Erigeron ochroleucus* var. *scribneri*; placed here as a synonym of *E. radicatus* because of its small (1.5–3 cm long) leaves and few (8) pappus bristles. The leaves, however, are linear-lanceolate and densely strigose and rays are bluish – features more consistently characteristic of *E. ochroleucus*.

Erigeron huberi Welsh & Atwood, Rhodora 103:71. 2001. TYPE: U.S.A. UTAH. DUCHESNE CO.: Uinta Mountains, Lake Fork Mtn., T2N R5W S16, NW1/4 of NE1/4, Uinta Base Meridian, plants growing along windswept ridge crest above limestone talus slopes, rocky soils, 10,900 ft, 21 Jul 1998, *A. Huber and C. Wedig 3825* (HOLOTYPE: BRY; ISOTYPES: MO!, NY!, US internet image!).

Flowering May–Aug. Rocky slopes, ridges, and summits, ledges and crevices, outcrops and talus, usually limestone, alpine tundra; (1450–)1600–2750(–3350) m; British Columbia, Alberta; Saskatchewan; Colorado, Idaho, Montana, Nebraska, North Dakota, South Dakota, Utah, Wyoming.

1. Stems (1–)2–6(–12) cm high, usually arising from tips of short, thickened caudex branches; stems short-villous; leaves (0.5–)1–5(–8) cm long, sparsely loosely strigose adaxially, glabrous and shiny abaxially; involucres (3–)4–6(–8) mm high, hairs of involucre usually with colored crosswalls; pappus bristles (6–)7–11 _____ **Erigeron radicatus**
1. Stems (2–)8–18(–30) cm high, arising from a nearly common point near apex of thick taproot, caudex usually unbranched; stems loosely strigose; leaves (2–)4–9(–12) cm long, usually strigose on both surfaces at least on proximal 1/3–3/4 of blade, glabrous distally; involucres 5.5–7 mm high, hairs of involucre usually without colored crosswalls; pappus bristles 11–15 _____ **Erigeron ochroleucus**

Erigeron ochroleucus Nutt., Trans. Amer. Philos. Soc., 2, 7:309. 1840. TYPE: U.S.A. [probably central Wyoming, perhaps Natrona Co.]. "Plains of the Oregon" [Trail], [ca. Jun, 1834], *T. Nuttall s.n.* (GH!, PH!, UC-photo and fragment).

Erigeron ochroleucus Nutt. var. *scribneri* (Canby ex Rydb.) Cronq., Brittonia 6:189. 1947. *Erigeron scribneri* Canby ex Rydb., Mem. New York Bot. Gard. 1:405. 1900. TYPE: U.S.A. MONTANA. [MEAGHER CO.:] Little Belt Mountains, 12 Aug 1883, *F.L. Scribner* 77 (NY!). *Erigeron scribneri* Canby (Bot. Gaz. 15:150. 1890) was published as a "nomen provisorum."

Erigeron tweedyanus Canby & Rose, Bot. Gaz. 15:65. 1890. *Erigeron montanus* Rydb. [nom. nov.], Bull. Torrey Bot. Club 24:296. 1897. *Wyomingia tweedyana* (Canby & Rose) A. Nels., Man. Rocky Mt. Bot. 531. 1909. TYPE: U.S.A. MONTANA. PARK CO.: Jun 1889, *F. Tweedy s.n.* (NY- 2 sheets!).

Erigeron laetevirens Rydb., Bull. Torrey Bot. Club 28:506. 1901. TYPE: U.S.A. MONTANA. SHERIDAN CO.: Big Horn Mountains: Little Goose Creek, 8700 ft., Jul 1899, *F. Tweedy 2005* (NY!).

Flowering Jun–Aug. Rocky or sandy slopes, limestone outcrops and ridges, talus, sagebrush-grassland, juniper-mountain mahogany, ponderosa pine, limber pine, limber pine-Douglas fir, alpine tundra; 1100–3000(–3300) m. Alberta, British Columbia; Montana, Nebraska, South Dakota, Wyoming. The record for British Columbia is added from a report by Roemer (1996, as *E. ochroleucus* var. *scribneri*). Nesom and Murray (2004) report *E. ochroleucus* in arctic and boreal Alaska and immediately adjacent Yukon, long disjunct from the primary range in the western U.S.A. and adjacent Canada.

Plants of *Erigeron ochroleucus* are consistently relatively large in stature and white-rayed in northeastern and central Wyoming (Campbell, Converse, Crook, Fremont, Hot Springs, Natrona, Niobrara, and Weston cos.), where they occur at elevations of 1100–1900(–2400) and at similar elevations in the more montane areas of north-central Wyoming and adjacent Montana (Fig. 6). These plants match the type of the species. In the latter areas, however, at elevations characteristically about 2150–2750 m and ranging up to 3350 m, the plants are smaller and commonly blue-rayed, matching the type of *E. ochroleucus* var. *scribneri*, but such plants also commonly extend downward to 1600 m in these montane areas, and in the area of elevational overlap so much morphological variability exists that it seems impossible to distinguish var. *scribneri*. Smaller, blue-rayed plants also are occasionally encountered even in areas of predominantly larger, white-rayed ones. Reported chromosome numbers are $2n = 18$ from southern Alberta (Chinnappa & Chmielewski 1987) and Sheridan Co., Wyoming (Jones & Smogor 1984). A count of $2n = 54$ from Niobrara Co., Wyoming (Semple 1985) was from *Erigeron caespitosus* Nutt., the voucher misidentified by Nesom as *E. ochroleucus*.

Status of *Erigeron lackschewitzii*

Erigeron lackschewitzii was compared in its original description with *E. grandiflorus* Hook., but it instead is very similar and closely related to *E. ochroleucus*. Nesom (1989) treated it as a synonym of *E. ochroleucus*, but examination of additional collections confirms it as a distinct species. The distribution record for Glacier Co. (Fig. 6) is based on the citation in Lesica (2002). The record for Alberta (Waterton Lakes National Park) is added fide Joyce Gould (Alberta Natural Heritage Information Centre).

1. Involucres 5.5–7 mm high; phyllaries inconspicuously glandular, hairs of villous vestiture without colored crosswalls; ray corollas white or blue; disc corollas 2.8–3.6 mm; pappus bristles 12–15 ____ **Erigeron ochroleucus**
1. Involucres 6–8 mm high; phyllaries densely and conspicuously glandular, hairs of villous vestiture with dark purple crosswalls; ray corollas purple to lavender; disc corollas 3.5–4.3 mm; pappus bristles 15–24 ____ **Erigeron lackschewitzii**

Erigeron lackschewitzii Nesom & W.A. Weber, Madroño 30:245. 1983. TYPE: U.S.A. MONTANA. TETON CO.: Bob Marshall Wilderness Area, Flathead Range, summit of Headquarters Pass, 2365 m, large colony in small, dry meadow on the narrow saddle, 29 Jul 1978, *K. Lackschewitz 8487* (HOLOTYPE: MONTU!; ISOTYPES: COLO!, NY!).

Flowering Jul–Aug. Rocky slopes and ridges, terraces, talus, meadows, usually calcareous; 2250–2500 m; Alberta; Montana.

Status of *Erigeron parryi*

Cronquist (1947) maintained *Erigeron parryi*, noting (p. 190) that it probably is "merely an unusual form" of *E. ochroleucus*, but he later (1955) treated it (at least by implication) as a synonym of *E. ochroleucus*. Collections similar to the type, however, from the region of the type locality in southwestern Montana and adjacent Wyoming (Fig. 6) suggest that *E. parryi* is distinct. Leaves of *E. parryi* are equally hairy (hirsute to strigose-hirsute) on both surfaces, contrasted with the reduced vestiture (loosely strigose) on adaxial surfaces of *E. ochroleucus* leaves. Also, *E. parryi* tends to have smaller heads with fewer rays and the caudices sometimes are branched. The variation in orientation of vestiture is unusual, and as between *E. ochroleucus* and *E. radicatus*, the nature of the differentiation (or lack of differentiation) between *E. ochroleucus* and *E. parryi* is not clear.

1. Leaves 1–2.5 cm long, narrowly oblanceolate, equally hairy on both surfaces; caudices branched or not; involucres 4–6 mm high, 7–10 mm wide; ray florets 22–30 ____ **Erigeron parryi**
1. Leaves 2–6 cm long, linear to narrowly oblanceolate, strigose adaxially, less hairy to glabrous abaxially; caudices usually not branched; involucres 5.5–7 mm high, 10–15(–18) mm wide; ray florets 30–62 ____ **Erigeron ochroleucus**

Erigeron parryi Canby & Rose, Bot. Gaz. 15:65. 1890. TYPE: U.S.A. MONTANA. BEAVERHEAD CO.: Grasshopper Creek, dry hills, 7000 ft, Jul 1888, *F. Tweedy 15* (GH internet image!, NY!, US?). Canby and Rose cited only "*Frank Tweedy 15*" as the type.

Plants perennial, taprooted, caudices with or without short, thickened branches. **Stems** 1.5–5 cm, erect, short-hirsute to loosely strigose-villous, eglandular. **Leaves** basal and cauline, basal narrowly oblanceolate, 1–2.5 cm long, 0.8–2.5 mm wide, entire, cauline on proximal 1/2–2/3 of stem, gradually reduced distally, densely strigose to strigose-hirsute on both surfaces, eglandular, eciliate. **Heads** 1; involucres 4–6 mm high, 7–10 mm wide; phyllaries in (2–)3 equal to subequal series, filiform-attenuate and purplish at apex, sparsely to densely villous-strigose, basal cross-walls sometimes purple, sparsely minutely glandular. **Ray florets** 22–30, corollas 6–8 mm, laminae white to pink or bluish, not coiling or reflexing. **Disc florets:** corollas 2.4–3 mm, throat not indurate or inflated.

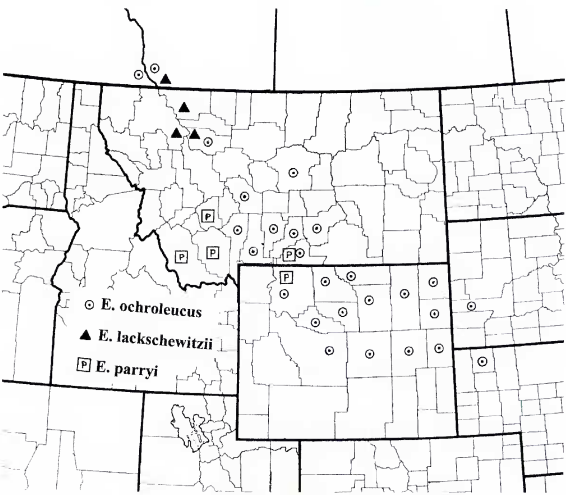

FIG. 6. Distribution of *Erigeron ochroleucus*, *E. lackschewitzii*, and *E. parryi*. Records are primarily from collections at NY and RM (see comments in text).

Cypselae 2–2.3 mm, 2-nerved, densely strigose; pappus bristles 12–15, readily deciduous, outer setae or scales prominent.

Flowering Jun–Aug. Open, rocky sites, limestone and quartzite; 1600–2250(–2600) m; endemic to southwestern Montana and adjacent Wyoming.

Additional collections examined: **U.S.A. MONTANA. Beaverhead Co.:** crest of Red Butte, ca. 8 mi NW of Lima, common, calcareous soil, with *Eriogonum mancum* and *Oxytropis besseyi*, T13S, R9W, Sec 10, 6200 ft, 6 Jul 1986, *Lesica 3928* (NY); exposed ridge crest 2 mi S of Grasshopper Creek, common in gravelly limestone and quartzite-derived soil, 6200 ft, with *Sphaeromeria capitata* and *Eriogonum mancum*, 22 Jun 2003, *Lesica 8657* (RM); Tendoy Mts., above Muddy Creek Rd, abundant on crest of ridge with *Lesquerella alpina*, *Penstemon aridus*, *Hymenopappus* sp., T13S, R10W, Sec 34, 7000 ft, 27 Jun 1987, *Lackschewitz 11307* (NY). **Carbon Co.:** N slopes above Lockheart Ranch, T8S, R28E, S13, *Poa* cover, 4400 ft, 9 Jun 1983, *Lichvar 5913* (RM); Big Pryor Mountain, gravelly soil, S slope, grassland, 8500 ft, 12 Jul 1926, *Williamson 28* (RM). **Jefferson Co.:** slopes of small hill at the head of Negro Hollow 6 mi NE of Caldwell, common in shallow limestone-derived soil, 5200 ft, with *Hymenoxys acaulis* and *Eritrichium howardii*, 17 Jun 2003, *Lesica 8630* (RM). Madison Co.: S end of Ruby Mts., 3 mi S and 3 mi W from Ruby Reservoir Dam, and SW of Mud Springs, common on small silty clay outcrop and occasional in immediately surrounding dry, rolling grassland, 5790 ft, with *Oryzopsis contracta*, *As-*

tragalus vexilliflexus, Chrysothamnus nauseosus, Stipa comata, Aster scopulorum, 4 Jul 1996, *Heidel and Cooper 1488* (RM); Highland Mountains, low ridge ca. 1 mi S of Victoria Mine W of Silver Star, locally common in shallow limestone-derived soil, 5250 ft, with *Cercocarpus ledifolius* and *Eriogonum mancum*, 18 Jun 2003, *Lesica 8640* (RM). WYOMING. Park Co.: Absaroka Mountains, North Fork Shoshone River drainage, ridge E of Pagoda Creek, ca. 1.5–2.5 mi S of US Hwy 14-16 & 20, open rocky areas with scattered Douglas fir and limber pine, 7200–8000 ft, 11 Jun 1986, *Evert 9860* (RM).

Leaves and stems of *Lesica 3928, 8640*, and *8657* and *Williamson 28* are hirsute with stiffly spreading hairs, similar to those of the type collection; leaves of *Lackschewitz 11307, Lesica 8630, Lichvar 5913, Heidel and Cooper 1488*, and *Evert 9860* are hirsute-strigose with loosely appressed hairs. Although the vestiture of the latter six collections approaches the orientation of that of *E. ochroleucus*, the hairs are stiffer and slightly shorter than characteristic of *E. ochroleucus*.

Peter Lesica (submitted) has reached a similar conclusion regarding the distinction of *Erigeron parryi*, based on field experience, more numerous collections than recorded here, and a morphometric study. My conclusions were reached independently of his but were based on his collections, in significant part, at NY and RM. His concepts of *E. ochroleucus* and *E. radicatus* also are similar to those outlined here but not identical.

Erigeron tracyi an earlier name for *Erigeron colomexicanus*

I have been using *Erigeron colomexicanus* as the name for this species, but both *E. tracyi* and *E. commixtus* were published seven years earlier, simultaneously (immediate succession in the same paper; Greene 1902). Plants of the type collection of *E. tracyi*, as well as those of *E. commixtus*, are early season forms (essentially a basal rosette with a single, subscapiform, monocephalous stem) that had not yet produced runners characteristic of the species.

Erigeron tracyi Greene, Pittonia 5:59. 1902. TYPE: U.S.A. TEXAS. [JEFF DAVIS CO.:] Davis Mts., 28 Apr 1902, *S.M. Tracy* and *F.S. Earle 320* (HOLOTYPE: US!; ISOTYPES: GH!, NY!, OS!).

Erigeron commixtus Greene, Pittonia 5:58. 1902. TYPE: U.S.A. TEXAS. [JEFF DAVIS CO.:] Cañon of the Limpia, mountains of west Texas, 26 Apr 1902, *S.M. Tracy* and *F.S. Earle 279* (HOLOTYPE: US!, ISOTYPES: GH!, NY!, TAES!, TEX!).

Erigeron cinereus A. Gray, Mem. Amer. Acad. Arts n.s., 4[Pl. Fendler.]:68. 1849 (not Hook. & Arn. 1836). *Erigeron divergens* Torrey & A. Gray var *cinereus* (A. Gray) A. Gray, Smithsonian Contr. Knowl. 3, Art. 5 [Pl. Wright.]:91. 1852. *Erigeron colomexicanus* A. Nels. [nom. nov.], Man. Bot. Rocky Mts., 529. 1909. TYPE: U.S.A. NEW MEXICO. [SANTA FE CO.:] near Santa Fe, 1847, *A. Fendler 374* (HOLOTYPE: GH!; ISOTYPES: GH, NY! UC-2 sheets!, US!).

Taxonomic status of *Erigeron acris* in North America

Erigeron acris L. (Sp. Pl. 653. 1753) has long been recognized as a species widespread in North America, but the nomenclature of these plants and an understanding of their relationship to expressions of the species in Europe and Asia still are unsettled. The type of *Erigeron acris* is a European plant. The taxonomic summary presented here is intended only as an overview.

Most names previously used at infraspecific rank for the American plants refer to Eurasian endemics: *Erigeron angulosus*, *E. asteroides*, *E. droebachiensis*, *E. elongatus*, and *E. politus* (Šida 1998; Tzvelev 2002) (see taxonomic summary below). The name *Erigeron acris* var. *kamtschaticus* was reserved by Hultén (1968a, 1968b) for a single North American collection made at "Junction Firth R. and Mancha Creek on the Alaska-Yukon boundary in August 1961;" he treated all others of the species in North America as *E. acris* subsp. *politus*. Entire-leaved plants, however, apparently are the common form of the species even in the Kamchatka area, and Gleason and Cronquist (1991) and Cronquist (1994) are followed here in using *E. acris* var. *kamtschaticus* as the correct name for the North American plants. Hara (1939) also viewed "the common form in Eastern Asia and North America ... [as] identical with *E. kamtschaticus* DC.," but he treated it as a variety of *E. angulosus*. Czerepanov (1995) and Šida (1998) have treated *E. kamtschaticus* and *E. acris* as separate species, as did deCandolle much earlier, in his original description of *E. kamtschaticus*.

Two other North American taxa closely related to *Erigeron acris* are treated at specific rank in the forthcoming Flora of North America (FNA) account of *Erigeron*: *E. nivalis* Nutt. (= *E. jucundus* Greene, *E. debilis* (A. Gray) Rydb.) and *E. elatus* (Hook.) Greene. *Erigeron nivalis* has often been treated at infraspecific rank within *E. acris*, but the two taxa are broadly sympatric without obvious intergrades in the northwestern U.S.A. and Canada. Both occur over a wide range of elevation and in similar habitats.

Erigeron acris L. var. **kamtschaticus** (DC.) Herder, Bull. Soc. Nat. Moscou Sect. Biol., Ser. 2. 38:392. 1865. *Erigeron kamtschaticus* DC., Prodr. 5:290. 1836. TYPE: "in Kamtschatka," (deCandolle noted "v. s. comm. ab ill. Acad. sc. Petrop.;" Cronquist (1994) noted "holotype at G!"). *Erigeron acris* L. subsp. *kamtschaticus* (DC.) H. Hara, J. Jap. Bot. 15:317. 1939. *Erigeron angulosus* Gaudin var. *kamtschaticus* (DC.) H. Hara, Rhodora 41:389. 1939. *Trimorpha acris* (L.) S.F. Gray var. *kamtschatica* (DC.) Nesom, Phytologia 67:64. 1989.

Erigeron yellowstonensis A. Nels., Bot. Gaz. (Coulter) 30:198. 1900. TYPE: U.S.A. WYOMING. Yellowstone National Park, near Yellowstone Lake, in loose sandy soil in the open pine woods, 6 Aug 1899, *A. Nelson 6348 with E. Nelson* (HOLOTYPE: RM; ISOTYPE: NY!). *Erigeron lapiluteus* A. Nels. [nom. illeg.], New Man. Bot. Centr. Rocky Mts. 530. 1909. *Erigeron lapiluteus* is an illegitimate replacement name for *E. yellowstonensis*.

Erigeron elongatus Ledeb. [nom. inval.], Icon. Pl. Fl. Ross. 1:9, tab. 31. 1829 (non *E. elongatus* Moench 1802). *Erigeron acris* var. *elongatus* (Ledeb.) Mela & Cajand., Suom. Kasv. 566. 1906.

Erigeron politus Fries (misapplied), Bot. Not. (Lund.) 1843:120. 1843. *Erigeron acris* L. subsp. *politus* (Fries) H. Lindb. f., Enum. Pl. Fennoscand. Orient. 56. 1901 (non Schinz & R. Keller 1909).

Erigeron asteroides Andrz. ex Besser (misapplied), Enum. Pl. Volhyn. 33. 1822 (non Roxb. 1814). *Erigeron acris* L. var. *asteroides* (Andrz. ex Besser) DC., Prodr. 5:290. 1836. *Trimorpha acris* (L.) S.F. Gray var. *asteroides* (Andrz. ex Besser) Nesom, Phytologia 67:64. 1989. Listed by Tzvelev (2002) as a synonym of the Eurasian *E. podolicus* Besser.

Erigeron angulosus Gaudin (misapplied), Fl. Helv. 5:265. 1829. *Erigeron acris* L. var. *angulosus* (Gaudin) Vacc., Cat. Pl. Vall. Aoste 1:350. 1909.

Erigeron droebachiensis O. Mueller (misapplied), Fl. Dan. 5, 15:4, tab. 874. 1782. *Erigeron acris* L.

var. *droebachiensis* (O. Mueller) Blytt. Norges Fl. 1:562. 1861. *Erigeron acris* L. subsp. *droebachiensis* (O. Mueller) Arcang., Comp. Fl. Ital. 340. 1882.

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